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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/990,640	11/21/2001	Chien-Wei Li	H0001160	3688

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HONEYWELL INTERNATIONAL INC.
101 COLUMBIA ROAD
P O BOX 2245
MORRISTOWN, NJ 07962-2245

EXAMINER

MCNEIL, JENNIFER C

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 07/25/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/990,640

Applicant(s)

LI ET AL.

Examiner

Jennifer McNeil

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 11-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22,24,25,29-31,34,35 and 41-45 is/are allowed.
- 6) ☒ Claim(s) 1,4,11,12,15-17,19,20,23,26-28,32,33 and 36-40 is/are rejected.
- 7) ☒ Claim(s) 2,3,13,14,18 and 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

This action is in response to the amendment received April 21, 2003. Claims 1-4, and 11-45 are pending. Claims 5-10 were canceled by amendment.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 23, 26-28, 32, and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 23, 33, and 34 each include a choice of additives. However, they also require the presence of lanthana. Are the additional choices also present in the coating? Or are these claims directed to the embodiment with tantala combined with lanthana?

Claim 26 contains the phrase "the additive". There is insufficient antecedent basis for this limitation. Are claims 26-28 referring to a lanthana-tantala mixture, or does the mixture of claim 22 further include alumina? Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application

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for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Matsudaira (US 4,670,355). Matsudaira teaches an electroluminescent panel comprising a glass substrate and a layer comprising tantalum pentoxide and aluminum oxide over the glass substrate. The glass substrate may be aluminosilicate glass (col. 2, lines 51-55). Regarding applicant's new limitation of the aluminum being "as low as 11 mol%", Matsudaira teaches that the aluminum may be present in amounts of 5, 20, and 50 weight percent (see Table 1). The range limitation of the instant claims is considered to be any amount greater than 11 mol%. The 20 and 50 wt% examples are considered to fall within the range of "as low as 11 mol%". Regarding applicant's new limitation wherein a "presence of CaO is eliminated", Matsudaira does not teach the presence of CaO, therefore it is considered to not be present.

Claims 1, 4, 11, and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Skoog et al (US 6,210,791). Skoog teaches a thermal barrier coating for a silicon containing substrate. The coating includes a diffuse reflective barrier coating having a composition of alumina particles at a level of 5-85 wt%, and 1-40 wt% of other particles such as tantalum oxide (col. 7, lines 25-46; col. 8, lines 53-64).

Regarding the limitation of the concentration of alumina being as low as 11 mol%, and claim 12, an example given in col. 10, lines 55-60, teach the alumina concentration of 30.2 and 22 wt%. This is considered to overlap with applicant's claimed range.

Regarding claim 4, the substrate may be silicon nitride or silicon carbide (col. 6, lines 11-16).

Regarding the elimination of CaO, Skoog does not teach the presence of CaO and it is considered to not be present.

Regarding claim 11, the coating of Skoog may be sintered.

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 15-17, 19, 20, and 36-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Skoog et al (US 6,210,791) in view of Li et al (US 6,582,779). Skoog teaches a thermal barrier coating having a diffuse reflective barrier coating as discussed above. Skoog does not teach alternative methods for deposition of the coating onto the substrate. Li teaches a protective coating for silicon nitride components including a tantalum oxide outer layer. Li teaches that the layer may be applied by a high temperature plasma flow; the ceramic coating becomes molten, and is subsequently quenched and solidified. The method taught by Li exemplifies a known manner in the art of turbines to deposit a coating onto a substrate with sufficient bonding for use in highly corrosive environments. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the coating of Skoog in the manner taught by Li to provide a coating with sufficient adhesion to be used in highly corrosive environments.

Regarding preheating the mixture, application via plasma heats the mixture.

Regarding claims 16 and 39, the thickness of the layer of Skoog may be 0.001-0.006 inches thick (1-6 mil; 25.4-152 microns).

Regarding claims 17 and 40, the alumina may be present at concentrations of 30.2 and 22 wt%. This is considered to overlap with applicant's claimed range.

Regarding claim 36 and 37, Li teaches that the silicon substrate may be pretreated and preheated (col. 4, lines 36-49; col. 5, lines 1-18).

Allowable Subject Matter

Claims 22, 24, 25, 29, 30, 31, 34, 35, and 41-45 are allowed.

Claims 2, 3, 13, 14, 18, 21, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 23, 26-28, 32, and 33 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Response to Arguments

A new rejection of claims 1, 4, 11, 12, 15-17, 19, 20, and 36-40 based on Skoog '791 is made above.

Applicant's arguments and amendments with regard to Cook '293, Iwamoto '806, and Haluska '526, and Matsudaira ' 355 (regarding claims 2, and 5-7) have overcome the rejections of record.

Applicant's arguments filed April 21, 2003 have been fully considered but they are not persuasive with regard to Matsudaira and claim 1.

Applicant states that Matsudaira does not teach a "protective coating". It is the examiner's position that any coating on the substrate of Matsudaira may be considered a protective coating of the underlying substrate. Using the term "protective coating" does not structurally define the article over the prior art. Applicant also states Matsudaira does not disclose an aluminum oxide concentration as low as 11 mol%. This range is considered to include any amount over 11 mol%, and as stated above, the examples of Matsudaira are considered to fall within this range. Applicant states that Matsudaira does not teach

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the elimination of CaO. Matsudaira does not teach any presence of CaO, and it is therefore considered to not be present in the coating.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer McNeil whose telephone number is 703-305-0553. The examiner can normally be reached on Monday through Friday, 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on 703-308-3822. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Jennifer McNeil
Examiner
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JCM
July 22, 2003